



SEQUENCE LISTING

(1) GENERAL INFORMATION

(i) APPLICANT: ANDERTON, STEPHEN MARK
VAN DER ZEE, RUURD
VAN EDEN, WILLEM

(ii) TITLE OF INVENTION: PEPTIDE FRAGMENTS OF MICROBIAL STRESS
PROTEINS AND PHARMACEUTICAL COMPOSITION MADE THEREOF FOR THE
TREATMENT AND PREVENTION OF INFLAMMATORY DISEASES

(iii) NUMBER OF SEQUENCES: 6

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: THE WEBB LAW FIRM
(B) STREET: 700 KOPPERS BUILDING, 436 SEVENTH AVENUE
(C) CITY: PITTSBURGH
(D) STATE: PENNSYLVANIA
(E) COUNTRY: UNITED STATES OF AMERICA
(F) ZIP: 15219-1818

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: 3.5" FLOPPY DISK
(B) COMPUTER: Midwest Micro 486-50
(C) OPERATING SYSTEM: DOS
(D) SOFTWARE: WORDPERFECT 6.1

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: 08/716,169
(B) FILING DATE: 18-SEP-1996
(C) CLASSIFICATION:

(vii) PRIOR APPLICATION DATA:

(A) APPLICATION NUMBER: PCT/NL95/00108
(B) FILING DATE: 21-MAR-1995

(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 540
(B) TYPE: AMINO ACID
(C) STRANDEDNESS: SINGLE
(D) TOPOLOGY: UNKNOWN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

Met Ala Lys Thr Ile Ala Tyr Asp Glu Glu Ala Arg Arg Gly Leu 15
Glu Arg Gly Leu Asn Ala Leu Ala Asp Ala Val Lys Val Thr Leu 30
Gly Pro Lys Gly Arg Asn Val Val Leu Glu Lys Lys Trp Gly Ala 45
Pro Thr Ile Thr Asn Asp Gly Val Ser Ile Ala Lys Glu Ile Glu 60
Leu Glu Asp Pro Tyr Glu Lys Ile Gly Ala Glu Leu Val Lys Glu 75
Val Ala Lys Lys Thr Asp Asp Val Ala Gly Asp Gly Thr Thr 90
Ala Thr Val Leu Ala Gln Ala Leu Val Arg Glu Gly Leu Arg Asn 105
Val Ala Ala Gly Ala Asn Pro Leu Gly Val Lys Arg Gly Ile Glu 120
Lys Ala Val Glu Lys Val Thr Glu Thr Leu Leu Lys Gly Ala Lys 135
Glu Val Glu Thr Lys Glu Gln Ile Ala Ala Thr Ala Ala Ile Ser 150
Ala Gly Asp Gln Ser Ile Gly Asp Leu Ile Ala Glu Ala Met Asp 165
Lys Val Gly Asn Glu Gly Val Ile Thr Val Glu Glu Ser Asn Thr 180
Phe Gly Leu Gln Leu Glu Leu Thr Glu Gly Met Arg Phe Asp Lys 195
Gly Tyr Ile Ser Gly Tyr Phe Val Thr Asp Pro Glu Arg Gln Glu 210
Ala Val Leu Glu Asp Pro Tyr Ile Leu Leu Val Ser Ser Lys Val 225
Ser Thr Val Lys Asp Leu Leu Pro Leu Leu Glu Lys Val Ile Gly 240
Ala Gly Lys Pro Leu Leu Ile Ile Ala Glu Asp Val Glu Gly Glu 255
Ala Leu Ser Thr Leu Val Val Asn Lys Ile Arg Gly Thr Phe Lys 270
Ser Val Ala Val Lys Ala Pro Gly Phe Gly Asp Arg Arg Lys Ala 285
Met Leu Gln Asp Met Ala Ile Leu Thr Gly Gly Gln Val Ile Ser 300
Glu Glu Val Gly Leu Thr Leu Glu Asn Ala Asp Leu Ser Leu Leu 315

Gly	Lys	Ala	Arg	Lys	Val	Val	Val	Thr	Lys	Asp	Glu	Thr	Thr	Ile	330
Val	Glu	Gly	Ala	Gly	Asp	Thr	Asp	Ala	Ile	Ala	Gly	Arg	Val	Ala	345
Gln	Ile	Arg	Gln	Glu	Ile	Glu	Asn	Ser	Asp	Ser	Asp	Tyr	Asp	Arg	360
Glu	Lys	Leu	Gln	Glu	Arg	Leu	Ala	Lys	Leu	Ala	Gly	Gly	Val	Ala	375
Val	Ile	Lys	Ala	Gly	Ala	Ala	Thr	Glu	Val	Glu	Leu	Lys	Glu	Arg	390
Lys	His	Arg	Ile	Glu	Asp	Ala	Val	Arg	Asn	Ala	Lys	Ala	Ala	Val	405
Glu	Glu	Gly	Ile	Val	Ala	Gly	Gly	Gly	Val	Thr	Leu	Leu	Gln	Ala	420
Ala	Pro	Thr	Leu	Asp	Glu	Leu	Lys	Leu	Glu	Gly	Asp	Glu	Ala	Thr	435
Gly	Ala	Asn	Ile	Val	Lys	Val	Ala	Leu	Glu	Ala	Pro	Leu	Lys	Gln	450
Ile	Ala	Phe	Asn	Ser	Gly	Leu	Glu	Pro	Gly	Val	Val	Ala	Glu	Lys	465
Val	Arg	Asn	Leu	Pro	Ala	Gly	His	Gly	Leu	Asn	Ala	Gln	Thr	Gly	480
Val	Lys	Glu	Asp	Leu	Leu	Ala	Ala	Gly	Val	Ala	Asp	Pro	Val	Lys	495
Val	Thr	Arg	Ser	Ala	Leu	Gln	Asn	Ala	Ala	Ser	Ile	Ala	Gly	Leu	510
Phe	Leu	Thr	Thr	Glu	Ala	Val	Val	Ala	Asp	Lys	Pro	Glu	Lys	Glu	525
Lys	Ala	Ser	Val	Pro	Gly	Gly	Gly	Asp	Met	Gly	Gly	Met	Asp	Phe	540

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 333

(B) TYPE: AMINO ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: UNKNOWN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

Ala	Val	Lys	Val	Gly	Ile	Asn	Gly	Phe	Gly	Arg	Ile	Gly	Arg	Asn	15
Val	Phe	Arg	Ala	Ala	Leu	Lys	Asn	Pro	Asp	Ile	Glu	Val	Val	Ala	30
Val	Asn	Asp	Leu	Thr	Asp	Ala	Asn	Thr	Leu	Ala	His	Leu	Leu	Lys	45
Tyr	Asp	Ser	Val	His	Gly	Arg	Leu	Asp	Ala	Glu	Val	Ser	Val	Asn	60
Gly	Asn	Asn	Leu	Val	Val	Asn	Gly	Lys	Glu	Ile	Ile	Val	Lys	Ala	75
Glu	Arg	Asp	Pro	Glu	Asn	Leu	Ala	Trp	Gly	Glu	Ile	Gly	Val	Asp	90
Ile	Val	Val	Glu	Ser	Thr	Gly	Arg	Phe	Thr	Lys	Arg	Glu	Asp	Ala	105
Ala	Lys	His	Leu	Glu	Ala	Gly	Ala	Lys	Lys	Val	Ile	Ile	Ser	Ala	120
Pro	Ala	Lys	Asn	Glu	Asp	Ile	Thr	Ile	Val	Met	Gly	Val	Asn	Gln	135
Asp	Lys	Tyr	Asp	Pro	Lys	Ala	His	His	Val	Ile	Ser	Asn	Ala	Ser	150
Cys	Thr	Thr	Asn	Cys	Leu	Ala	Pro	Phe	Ala	Lys	Val	Leu	His	Glu	165
Gln	Phe	Gly	Ile	Val	Arg	Gly	Met	Met	Thr	Thr	Val	His	Ser	Tyr	180
Thr	Asn	Asp	Gln	Arg	Ile	Leu	Asp	Leu	Pro	His	Lys	Asp	Leu	Arg	195
Arg	Ala	Arg	Ala	Ala	Ala	Glu	Ser	Ile	Ile	Pro	Thr	Thr	Thr	Gly	210
Ala	Ala	Lys	Ala	Val	Ala	Leu	Val	Leu	Pro	Glu	Leu	Lys	Gly	Lys	225
Leu	Asn	Gly	Met	Ala	Met	Arg	Val	Pro	Thr	Pro	Asn	Val	Ser	Val	240
Val	Asp	Leu	Val	Ala	Glu	Leu	Glu	Lys	Glu	Val	Thr	Val	Glu	Glu	255
Val	Asn	Ala	Ala	Leu	Lys	Ala	Ala	Ala	Glu	Gly	Glu	Leu	Lys	Gly	270
Ile	Leu	Ala	Tyr	Ser	Glu	Glu	Pro	Leu	Val	Ser	Arg	Asp	Tyr	Asn	285
Gly	Ser	Thr	Val	Ser	Ser	Thr	Ile	Asp	Ala	Leu	Ser	Thr	Met	Val	300
Ile	Asp	Gly	Lys	Met	Val	Lys	Val	Val	Ser	Trp	Tyr	Asp	Asn	Glu	315
Thr	Gly	Tyr	Ser	His	Arg	Val	Val	Asp	Leu	Ala	Ala	Tyr	Ile	Ala	330
Ser	Lys	Gly													

(2) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 332

(B) TYPE: AMINO ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: UNKNOWN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

Val	Lys	Val	Gly	Val	Asn	Gly	Phe	Gly	Arg	Ile	Gly	Arg	Leu	Val	15
Thr	Arg	Ala	Ala	Phe	Ser	Cys	Asp	Lys	Val	Asp	Ile	Val	Ala	Ile	30

Asn	Asp	Pro	Phe	Ile	Asp	Leu	Asn	Tyr	Met	Val	Tyr	Met	Phe	Gln	45
Tyr	Asp	Ser	Thr	His	Gly	Lys	Phe	Asn	Gly	Thr	Val	Lys	Ala	Glu	60
Asn	Gly	Lys	Leu	Val	Ile	Asn	Gly	Lys	Pro	Ile	Thr	Ile	Phe	Gln	75
Glu	Arg	Asp	Pro	Val	Lys	Ile	Lys	Trp	Gly	Asp	Ala	Gly	Ala	Glu	90
Tyr	Val	Val	Glu	Ser	Thr	Gly	Val	Phe	Thr	Thr	Met	Glu	Lys	Ala	105
Gly	Ala	His	Leu	Lys	Gly	Gly	Ala	Lys	Arg	Val	Ile	Ile	Ser	Ala	120
Pro	Ser	Ala	Asp	Ala	Pro	Met	Phe	Val	Met	Gly	Val	Asn	His	Glu	135
Lys	Tyr	Asp	Asn	Ser	Leu	Lys	Ile	Val	Ser	Asn	Ala	Ser	Cys	Thr	150
Thr	Asn	Cys	Leu	Ala	Pro	Leu	Ala	Lys	Val	Ile	His	Asp	Asn	Phe	165
Gly	Ile	Val	Glu	Gly	Leu	Met	Thr	Thr	Val	His	Ala	Ile	Thr	Ala	180
Thr	Gln	Lys	Thr	Val	Asp	Gly	Pro	Ser	Gly	Lys	Leu	Trp	Arg	Asp	195
Gly	Arg	Gly	Ala	Ala	Gln	Asn	Ile	Ile	Pro	Ala	Ser	Thr	Gly	Ala	210
Ala	Lys	Ala	Val	Gly	Lys	Val	Ile	Pro	Glu	Leu	Asn	Gly	Lys	Leu	225
Thr	Gly	Met	Ala	Phe	Arg	Val	Pro	Thr	Pro	Asn	Val	Ser	Val	Val	240
Asp	Leu	Thr	Cys	Arg	Leu	Glu	Lys	Pro	Ala	Lys	Tyr	Asp	Asp	Ile	255
Lys	Lys	Val	Val	Lys	Gln	Ala	Ala	Glu	Gly	Pro	Leu	Lys	Gly	Ile	270
Leu	Gly	Tyr	Thr	Glu	Asp	Gln	Val	Val	Ser	Cys	Asp	Phe	Asn	Ser	285
Asn	Ser	His	Ser	Ser	Thr	Phe	Asp	Ala	Gly	Ala	Gly	Ile	Ala	Leu	300
Asn	Asp	Asn	Ile	Val	Lys	Leu	Ile	Ser	Trp	Tyr	Asp	Asn	Glu	Tyr	315
Gly	Tyr	Ser	Asn	Arg	Val	Val	Asp	Leu	Met	Ala	Tyr	Met	Ala	Ser	330
Lys	Glu														

(2) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 573

(B) TYPE: AMINO ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: UNKNOWN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

Met	Leu	Arg	Leu	Pro	Thr	Val	Phe	Arg	Gln	Met	Arg	Pro	Val	Ser	15
Arg	Val	Leu	Ala	Pro	His	Leu	Thr	Arg	Ala	Tyr	Ala	Lys	Asp	Val	30
Lys	Phe	Gly	Ala	Asp	Ala	Arg	Ala	Leu	Met	Leu	Gln	Gly	Val	Asp	45
Leu	Leu	Ala	Asp	Ala	Val	Ala	Val	Thr	Met	Gly	Pro	Lys	Gly	Arg	60
Thr	Val	Ile	Ile	Glu	Gln	Ser	Trp	Gly	Ser	Pro	Lys	Val	Thr	Lys	75
Asp	Gly	Val	Thr	Val	Ala	Lys	Ser	Ile	Asp	Leu	Lys	Asp	Lys	Tyr	90
Lys	Asn	Ile	Gly	Ala	Lys	Leu	Val	Gln	Asp	Val	Ala	Asn	Asn	Thr	105
Asn	Glu	Glu	Ala	Gly	Asp	Gly	Thr	Thr	Thr	Ala	Thr	Val	Leu	Ala	120
Arg	Ser	Ile	Ala	Lys	Glu	Gly	Phe	Glu	Lys	Ile	Ser	Lys	Gly	Ala	135
Asn	Pro	Val	Glu	Ile	Arg	Arg	Gly	Val	Met	Leu	Ala	Val	Asp	Ala	150
Val	Ile	Ala	Glu	Leu	Lys	Lys	Gln	Ser	Lys	Pro	Val	Thr	Thr	Pro	165
Glu	Glu	Ile	Ala	Gln	Val	Ala	Thr	Ile	Ser	Ala	Asn	Gly	Asp	Lys	180
Glu	Ile	Gly	Asn	Ile	Ile	Ser	Asp	Ala	Met	Lys	Lys	Val	Gly	Arg	195
Lys	Gly	Val	Ile	Thr	Val	Lys	Asp	Gly	Lys	Thr	Leu	Asn	Asp	Glu	210
Leu	Glu	Ile	Ile	Glu	Gly	Met	Lys	Phe	Asp	Arg	Gly	Tyr	Ile	Ser	225
Pro	Tyr	Phe	Ile	Asn	Thr	Ser	Lys	Gly	Gln	Lys	Cys	Glu	Phe	Gln	240
Asp	Ala	Tyr	Val	Leu	Leu	Ser	Glu	Lys	Lys	Ile	Ser	Ser	Ile	Gln	255
Ser	Ile	Val	Pro	Ala	Leu	Glu	Ile	Ala	Asn	Ala	His	Arg	Lys	Pro	270
Leu	Val	Ile	Ile	Ala	Glu	Asp	Val	Asp	Gly	Glu	Ala	Leu	Ser	Thr	285
Leu	Val	Leu	Asn	Arg	Leu	Lys	Val	Gly	Leu	Gln	Val	Val	Ala	Val	300
Lys	Ala	Pro	Gly	Phe	Gly	Asp	Asn	Arg	Lys	Asn	Gln	Leu	Lys	Asp	315
Met	Ala	Ile	Ala	Thr	Gly	Gly	Ala	Val	Phe	Gly	Glu	Glu	Gly	Leu	330
Thr	Leu	Asn	Leu	Glu	Asp	Val	Gln	Pro	His	Asp	Leu	Gly	Lys	Val	345
Gly	Glu	Val	Ile	Val	Thr	Lys	Asp	Asp	Ala	Met	Leu	Leu	Lys	Gly	360
Lys	Gly	Asp	Lys	Ala	Gln	Ile	Glu	Lys	Arg	Ile	Gln	Glu	Ile	Ile	375
Glu	Gln	Leu	Asp	Val	Thr	Thr	Ser	Glu	Tyr	Glu	Lys	Glu	Lys	Leu	390
Asn	Glu	Arg	Leu	Ala	Lys	Leu	Ser	Asp	Gly	Val	Ala	Val	Leu	Lys	405

Val	Gly	Gly	Thr	Ser	Asp	Val	Glu	Val	Asn	Glu	Lys	Lys	Asp	Arg	420
Val	Thr	Asp	Ala	Leu	Asn	Ala	Thr	Arg	Ala	Ala	Val	Glu	Glu	Gly	435
Ile	Val	Leu	Gly	Gly	Cys	Ala	Leu	Leu	Arg	Cys	Ile	Pro	Ala		450
Leu	Asp	Ser	Leu	Thr	Pro	Ala	Asn	Glu	Asp	Gln	Lys	Ile	Gly	Ile	465
Glu	Ile	Ile	Lys	Arg	Thr	Leu	Lys	Ile	Pro	Ala	Met	Thr	Ile	Ala	480
Lys	Asn	Ala	Gly	Val	Glu	Gly	Ser	Leu	Ile	Val	Glu	Lys	Ile	Met	495
Gln	Ser	Ser	Ser	Glu	Val	Gly	Tyr	Asp	Ala	Met	Ala	Gly	Asp	Phe	510
Val	Asn	Met	Val	Glu	Lys	Gly	Ile	Ile	Asp	Pro	Thr	Lys	Val	Val	525
Arg	Thr	Ala	Leu	Leu	Asp	Ala	Ala	Gly	Val	Ala	Ser	Leu	Leu	Thr	540
Thr	Ala	Glu	Val	Val	Val	Thr	Glu	Ile	Pro	Lys	Glu	Glu	Lys	Asp	555
Pro	Gly	Met	Gly	Ala	Met	Gly	Gly	Met	Gly	Gly	Gly	Met	Gly	Gly	570
Gly	Met	Phe													

(2) INFORMATION FOR SEQ ID NO: 5:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 547

(B) TYPE: AMINO ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: UNKNOWN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

Ala	Lys	Asp	Val	Lys	Phe	Gly	Ala	Asp	Ala	Arg	Ala	Leu	Met	Leu	15
Gln	Gly	Val	Asp	Leu	Leu	Ala	Asp	Ala	Val	Ala	Val	Thr	Met	Gly	30
Pro	Lys	Gly	Arg	Thr	Val	Ile	Ile	Glu	Gln	Ser	Trp	Gly	Ser	Pro	45
Lys	Val	Thr	Lys	Asp	Gly	Val	Thr	Val	Ala	Lys	Ser	Ile	Asp	Leu	60
Lys	Asp	Lys	Tyr	Lys	Asn	Ile	Gly	Ala	Lys	Leu	Val	Gln	Asp	Val	75
Ala	Asn	Asn	Thr	Asn	Glu	Glu	Ala	Gly	Asp	Gly	Thr	Thr	Thr	Ala	90
Thr	Val	Leu	Ala	Arg	Ser	Ile	Ala	Lys	Glu	Gly	Phe	Glu	Lys	Ile	105
Ser	Lys	Gly	Ala	Asn	Pro	Val	Glu	Ile	Arg	Arg	Gly	Val	Met	Leu	120
Ala	Val	Asp	Ala	Val	Ile	Ala	Glu	Leu	Lys	Lys	Gln	Ser	Lys	Pro	135
Val	Thr	Thr	Pro	Glu	Glu	Ile	Ala	Gln	Val	Ala	Thr	Ile	Ser	Ala	150
Asn	Gly	Asp	Lys	Asp	Ile	Gly	Asn	Ile	Ile	Ser	Asp	Ala	Met	Lys	165
Lys	Val	Gly	Arg	Lys	Gly	Val	Ile	Thr	Val	Lys	Asp	Gly	Lys	Thr	180
Leu	Asn	Asp	Glu	Leu	Glu	Ile	Ile	Glu	Gly	Met	Lys	Phe	Asp	Arg	195
Gly	Tyr	Ile	Ser	Pro	Tyr	Phe	Ile	Asn	Thr	Ser	Lys	Gly	Gln	Lys	210
Cys	Glu	Phe	Gln	Asp	Ala	Tyr	Val	Leu	Leu	Ser	Glu	Lys	Lys	Ile	225
Ser	Ser	Val	Gln	Ser	Ile	Val	Pro	Ala	Leu	Glu	Ile	Ala	Asn	Ala	240
His	Arg	Lys	Pro	Leu	Val	Ile	Ile	Ala	Glu	Asp	Val	Asp	Gly	Glu	255
Ala	Leu	Ser	Thr	Leu	Val	Leu	Asn	Arg	Gly	Lys	Val	Gly	Leu	Gln	270
Val	Val	Ala	Val	Lys	Ala	Pro	Gly	Phe	Gly	Asp	Asn	Arg	Lys	Asn	285
Gln	Leu	Lys	Asp	Met	Ala	Ile	Ala	Thr	Gly	Gly	Ala	Val	Phe	Gly	300
Glu	Glu	Gly	Leu	Asn	Leu	Asn	Leu	Glu	Asp	Val	Gln	Ala	His	Asp	315
Leu	Gly	Lys	Val	Gly	Glu	Val	Ile	Val	Thr	Lys	Asp	Asp	Ala	Met	330
Leu	Leu	Lys	Gly	Lys	Gly	Asp	Lys	Ala	His	Ile	Glu	Lys	Arg	Ile	345
Gln	Glu	Ile	Thr	Glu	Gln	Leu	Asp	Ile	Thr	Thr	Ser	Glu	Tyr	Glu	360
Lys	Glu	Lys	Leu	Asn	Glu	Arg	Leu	Ala	Lys	Leu	Ser	Asp	Gly	Val	375
Ala	Val	Leu	Lys	Val	Gly	Gly	Thr	Ser	Asp	Val	Glu	Val	Asn	Glu	390
Lys	Lys	Asp	Arg	Val	Thr	Asp	Ala	Leu	Asn	Ala	Thr	Arg	Ala	Ala	405
Val	Glu	Glu	Gly	Ile	Val	Leu	Gly	Gly	Gly	Cys	Ala	Leu	Leu	Arg	420
Cys	Ile	Pro	Ala	Leu	Asp	Ser	Leu	Lys	Pro	Ala	Asn	Glu	Asp	Gln	435
Lys	Ile	Gly	Ile	Glu	Ile	Ile	Lys	Arg	Ala	Leu	Lys	Ile	Pro	Ala	450
Met	Thr	Ile	Ala	Lys	Asn	Ala	Gly	Val	Glu	Gly	Ser	Leu	Ile	Val	465
Glu	Lys	Ile	Leu	Gln	Ser	Ser	Ser	Glu	Val	Gly	Tyr	Asp	Ala	Met	480
Leu	Gly	Asp	Phe	Val	Asn	Met	Val	Glu	Lys	Gly	Ile	Ile	Asp	Pro	495
Thr	Lys	Val	Val	Arg	Thr	Ala	Leu	Leu	Asp	Ala	Ala	Gly	Val	Ala	510
Ser	Leu	Leu	Thr	Thr	Ala	Glu	Ala	Val	Val	Thr	Glu	Ile	Pro	Lys	525

Glu Glu Lys Asp Pro Gly Met Gly Ala Met Gly Gly Met Gly Gly 540
 Gly Met Gly Gly Gly Met Phe

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS

(A) LENGTH: 555

(B) TYPE: AMINO ACID

(C) STRANDEDNESS: SINGLE

(D) TOPOLOGY: UNKNOWN

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

Ala Pro His Leu Thr Arg Ala Tyr Ala Lys Asp Val Lys Phe Gly 15
 Ala Asp Ala Arg Ala Leu Met Leu Gln Gly Val Asp Leu Leu Ala 30
 Asp Ala Val Ala Val Thr Met Gly Pro Lys Gly Arg Thr Val Ile 45
 Ile Glu Gln Ser Trp Gly Ser Pro Lys Val Thr Lys Asp Gly Val 60
 Thr Val Ala Lys Ser Ile Asp Leu Lys Asp Lys Tyr Lys Asn Ile 75
 Gly Ala Lys Leu Val Gln Asp Val Ala Asn Asn Thr Asn Glu Glu 90
 Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala Arg Ser Ile 105
 Ala Lys Glu Gly Phe Glu Lys Ile Ser Lys Gly Ala Asn Pro Val 120
 Glu Ile Arg Arg Gly Val Met Leu Ala Val Asp Ala Val Ile Ala 135
 Glu Leu Lys Lys Gln Ser Lys Pro Val Thr Thr Pro Glu Glu Ile 150
 Ala Gln Val Ala Thr Ile Ser Ala Asn Gly Asp Lys Asp Ile Gly 165
 Asn Ile Ile Ser Asp Ala Met Lys Lys Val Gly Arg Lys Gly Val 180
 Ile Thr Val Lys Asp Gly Lys Thr Leu Asn Asp Glu Leu Glu Ile 195
 Ile Glu Gly Met Lys Phe Asp Arg Gly Tyr Ile Ser Pro Tyr Phe 210
 Ile Asn Thr Ser Lys Gly Gln Lys Cys Glu Phe Gln Asp Ala Tyr 225
 Val Leu Leu Ser Glu Lys Lys Phe Ser Ser Val Gln Ser Ile Val 240
 Pro Ala Leu Glu Ile Ala Asn Ala His Arg Lys Pro Leu Val Ile 255
 Ile Ala Glu Asp Val Asp Gly Glu Ala Leu Ser Thr Leu Val Leu 270
 Asn Arg Leu Lys Val Gly Leu Gln Val Val Ala Val Lys Ala Pro 285
 Gly Phe Gly Asp Asn Arg Lys Asn Gln Leu Lys Asp Met Ala Ile 300
 Ala Thr Gly Gly Ala Val Phe Gly Glu Glu Gly Leu Asn Leu Asn 315
 Leu Glu Asp Val Gln Ala His Asp Leu Gly Lys Val Gly Glu Val 330
 Ile Val Thr Lys Asp Asp Ala Met Leu Leu Lys Gly Lys Gly Asp 345
 Lys Ala His Ile Glu Lys Arg Ile Gln Glu Ile Thr Glu Gln Leu 360
 Asp Ile Thr Thr Ser Glu Tyr Glu Lys Glu Lys Leu Asn Glu Arg 375
 Leu Ala Lys Leu Ser Asp Gly Val Ala Val Leu Lys Val Gly Gly 390
 Thr Ser Asp Val Glu Val Asn Glu Lys Lys Asp Arg Val Thr Asp 405
 Ala Leu Asn Ala Thr Arg Ala Ala Val Glu Glu Gly Ile Val Leu 420
 Gly Gly Gly Cys Ala Leu Leu Arg Cys Ile Pro Ala Leu Asp Ser 435
 Leu Lys Pro Ala Asn Glu Asp Gln Lys Ile Gly Ile Glu Ile Ile 450
 Lys Arg Ala Leu Lys Ile Pro Ala Met Thr Ile Ala Lys Asn Ala 465
 Gly Val Glu Gly Ser Leu Ile Val Glu Lys Ile Leu Gln Ser Ser 480
 Ser Glu Val Gly Tyr Asp Ala Met Leu Gly Asp Phe Val Asn Met 495
 Val Glu Lys Gly Ile Ile Asp Pro Thr Lys Val Val Arg Thr Ala 510
 Leu Leu Asp Ala Ala Gly Val Ala Ser Leu Leu Thr Thr Ala Glu 525
 Ala Val Val Thr Glu Ile Pro Lys Glu Glu Lys Asp Pro Gly Met 540
 Gly Ala Met Gly Gly Met Gly Gly Gly Met Gly Gly Met Phe 555